TO2TOF'EEhT8660

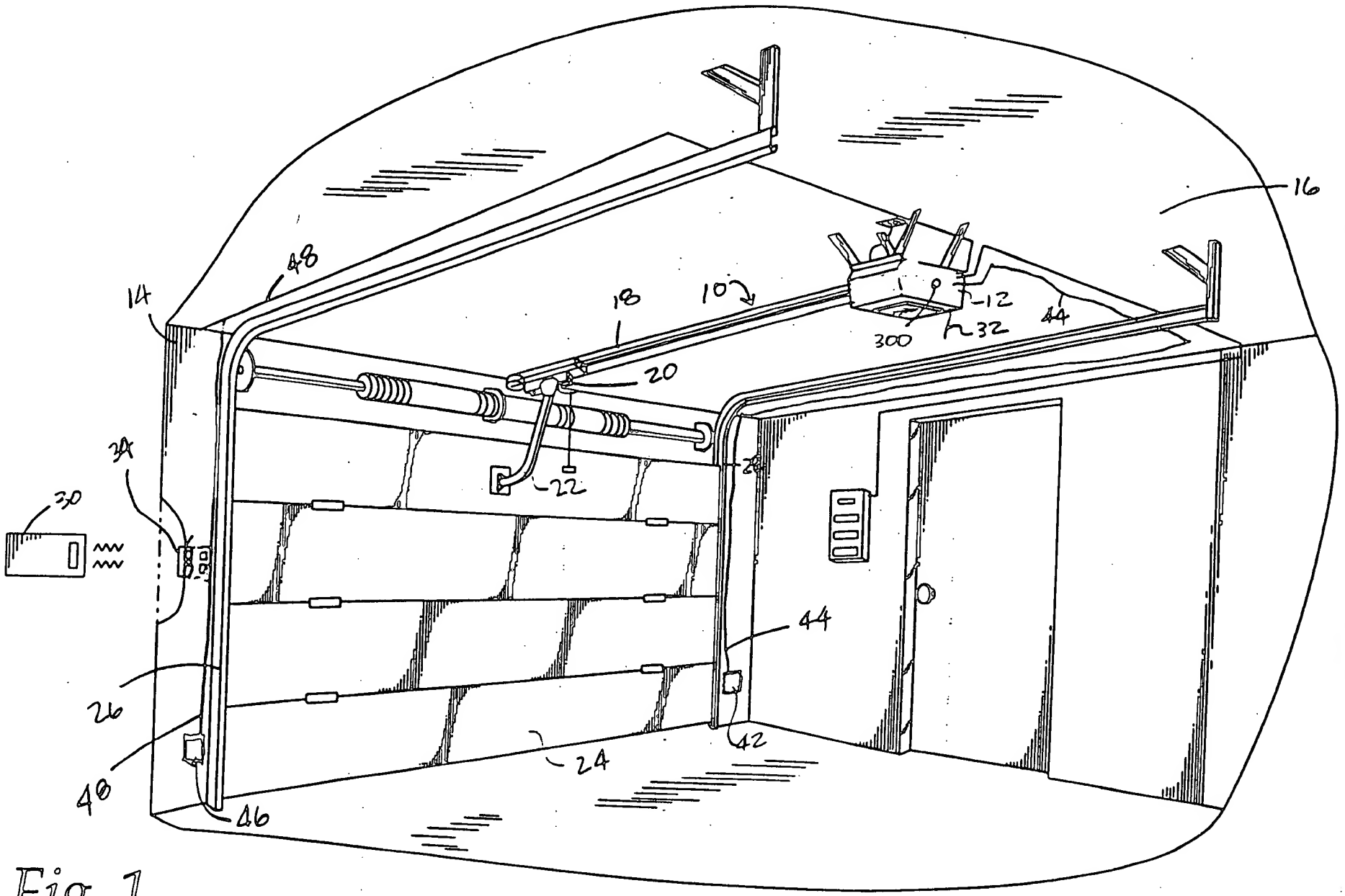
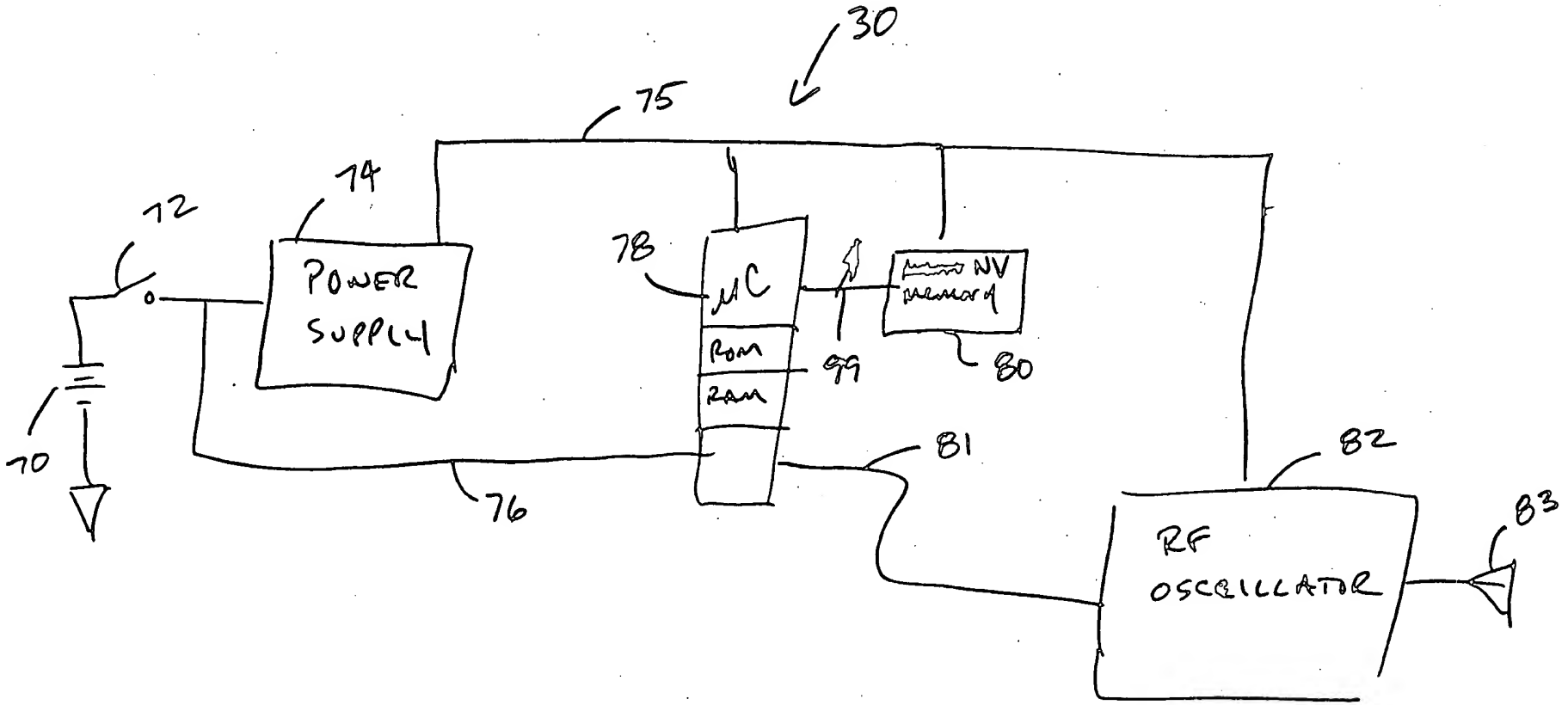


Fig. 1

TOZTOF" EEATB660



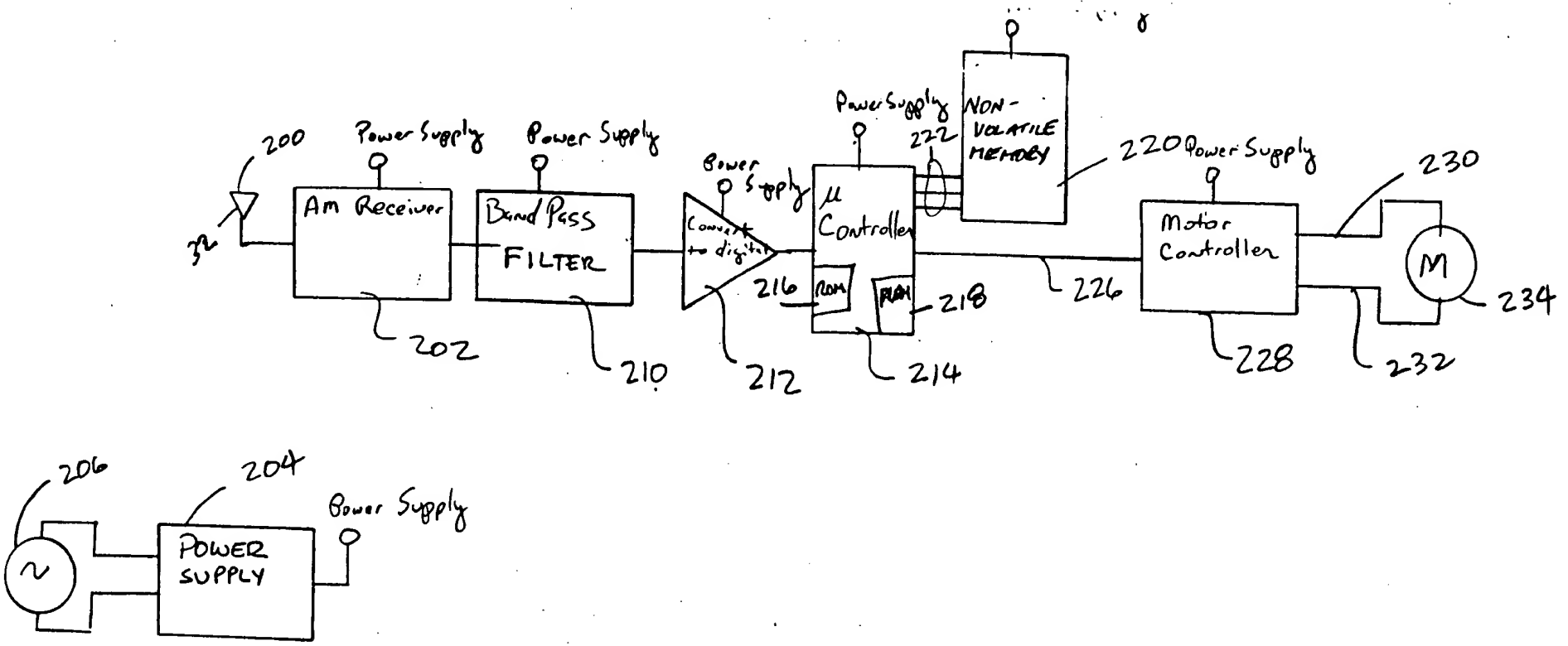

200
Power Supply
Power Supply
Power Supply
Power Supply
NON-VOLATILE MEMORY
220
Power Supply
230
Am Receiver
Band Pass FILTER
Convert to digital
μ Controller
222
Motor Controller
M
216
ROM
RAM
218
226
202
210
212
214
228
232
234
206
204
Power Supply
POWER SUPPLY

FIG 3

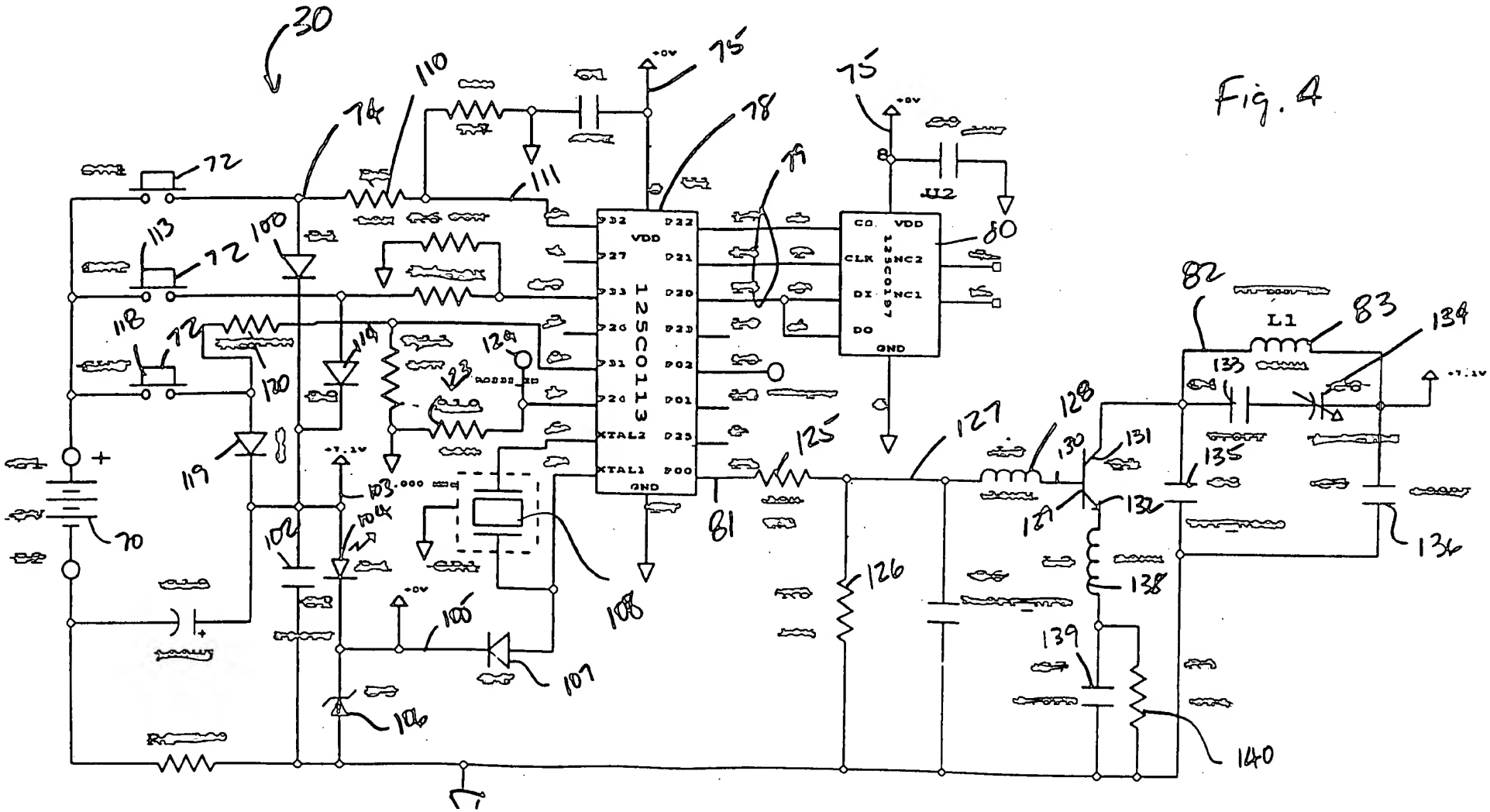
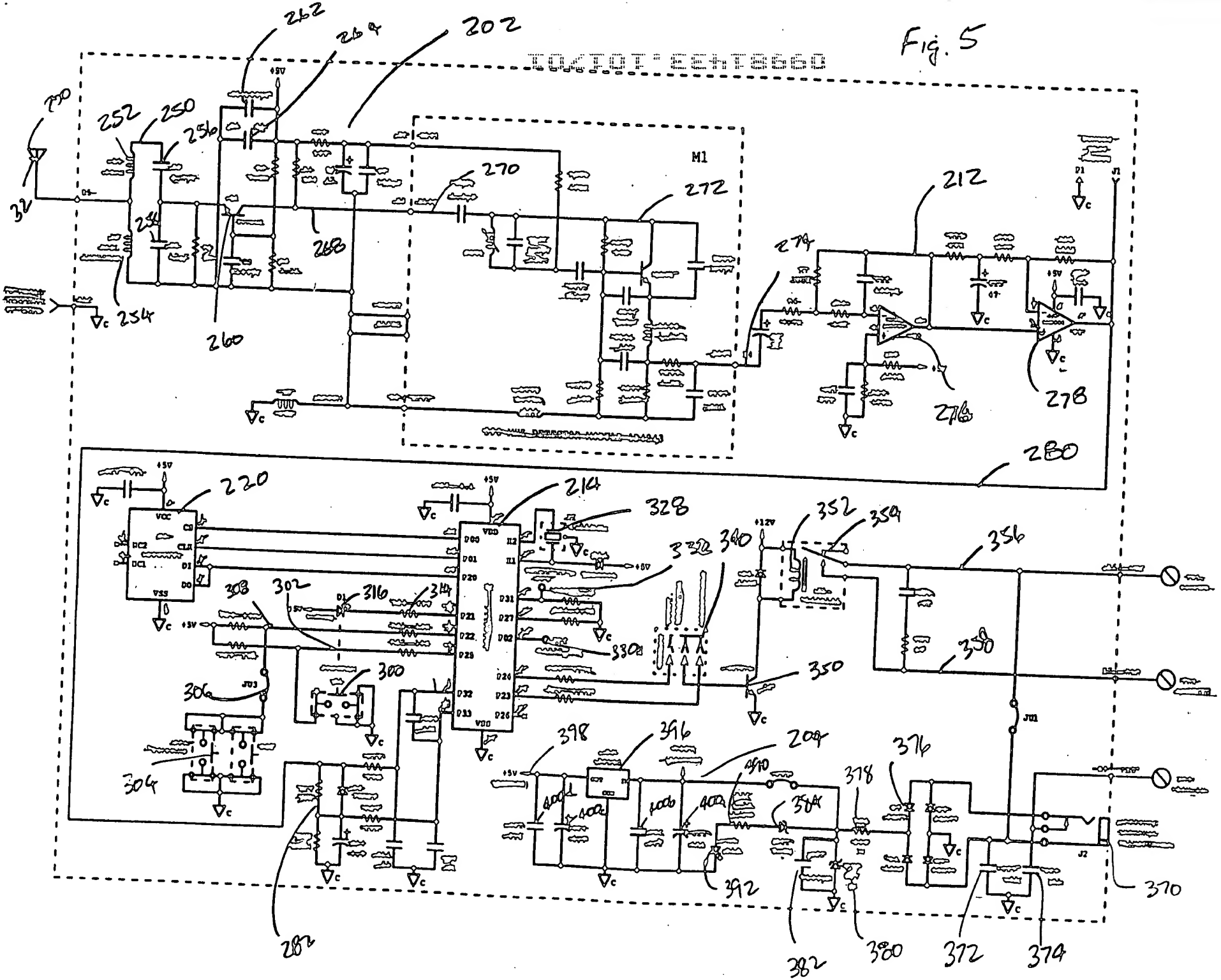
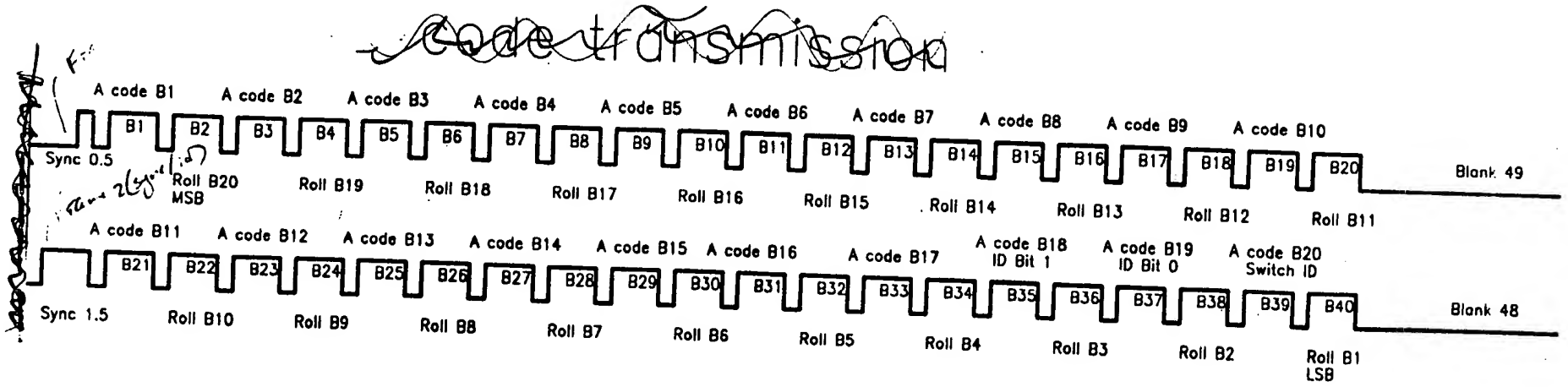

30
110
74
75
78
79
72
111
113
100
118
120
119
114
123
124
70
102
104
103.000 MHz
105
106
107
108
81
125
126
127
128
130
131
132
129
135
133
134
136
138
139
140
82
L1
83
U2
80
VDD
CLK
DI
DO
GND
SNC2
SNC1
L2SC0113
D32
D27
D33
D26
D31
D24
XTAL2
XTAL1
D22
D21
D20
D23
D02
D01
D25
D00
-7.1V
-0V

Fig. 4

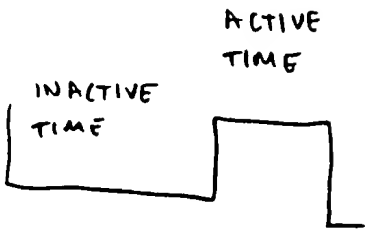
Fig. 5


202
262
264
252
250
256
270
272
M1
212
274
254
260
268
276
278
280
220
214
328
352
354
356
340
332
358
302
316
314
330
350
300
306
304
398
396
209
378
376
374
370
372
380
382
284

Code transmission

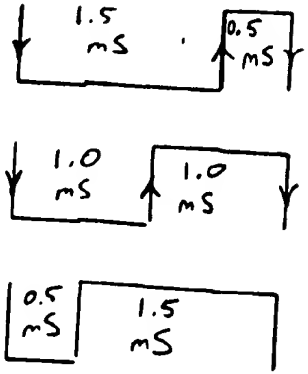


BIT VALUE



ACTIVE TIME - INACTIVE TIME

BIT TIMING



0.5 - 1.5 = -1.0 MILLISECONDS

1.0 - 1.0 = 0

1.5 - 95 = 1.0

G:\ENGINEER\RUSSP\ABC\DOCDETX2.AF3
Thursday, May 4, 1995 Rolling Code Transmitter Algorithm
10:08 AM
The Chamberlain Group
by Russ Powers

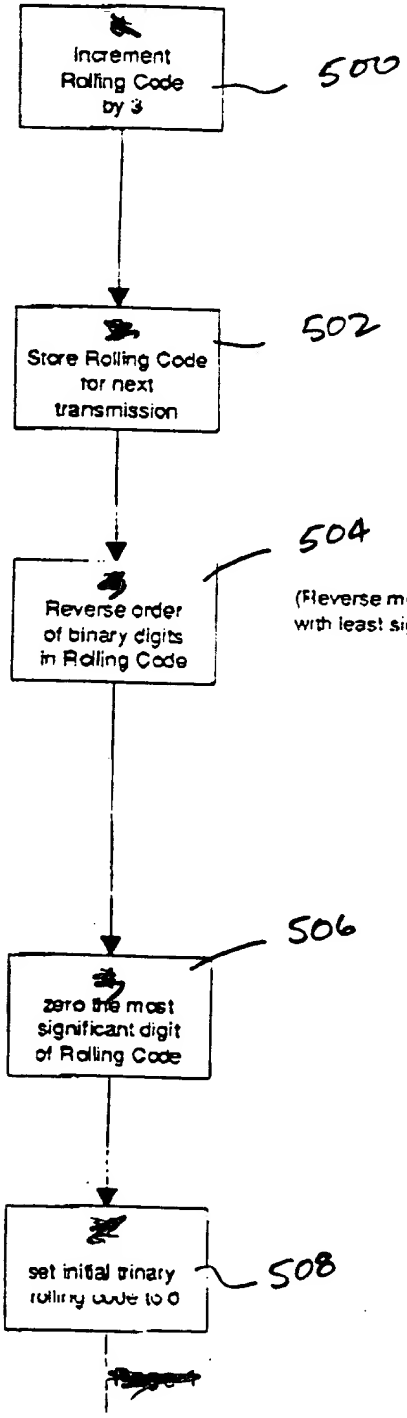


Fig. 7A

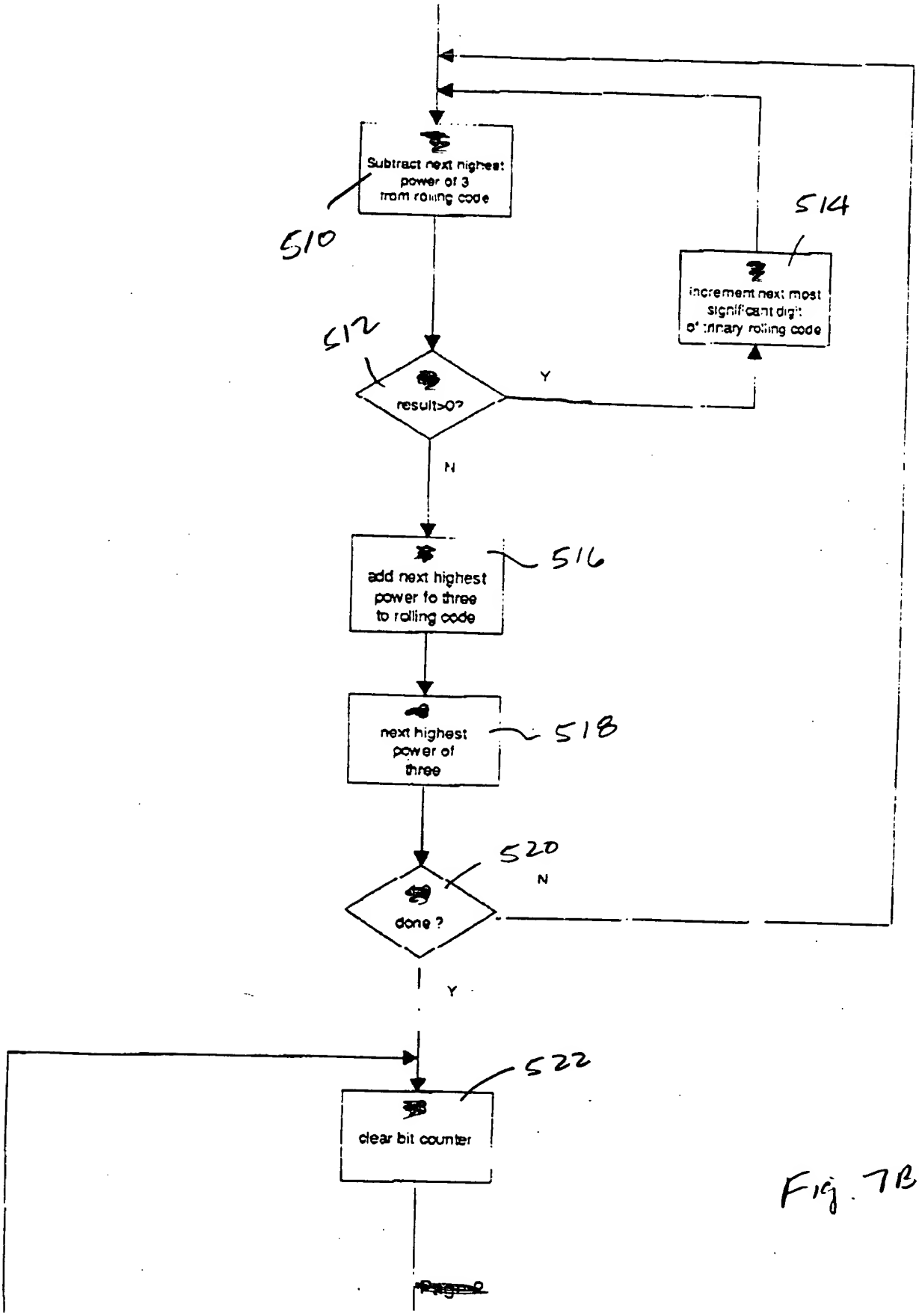

Subtract next highest power of 3 from rolling code
510
increment next most significant digit of binary rolling code
514
512
result>0?
Y
N
add next highest power to three to rolling code
516
next highest power of three
518
520
N
done ?
Y
clear bit counter
522

Fig. 7B

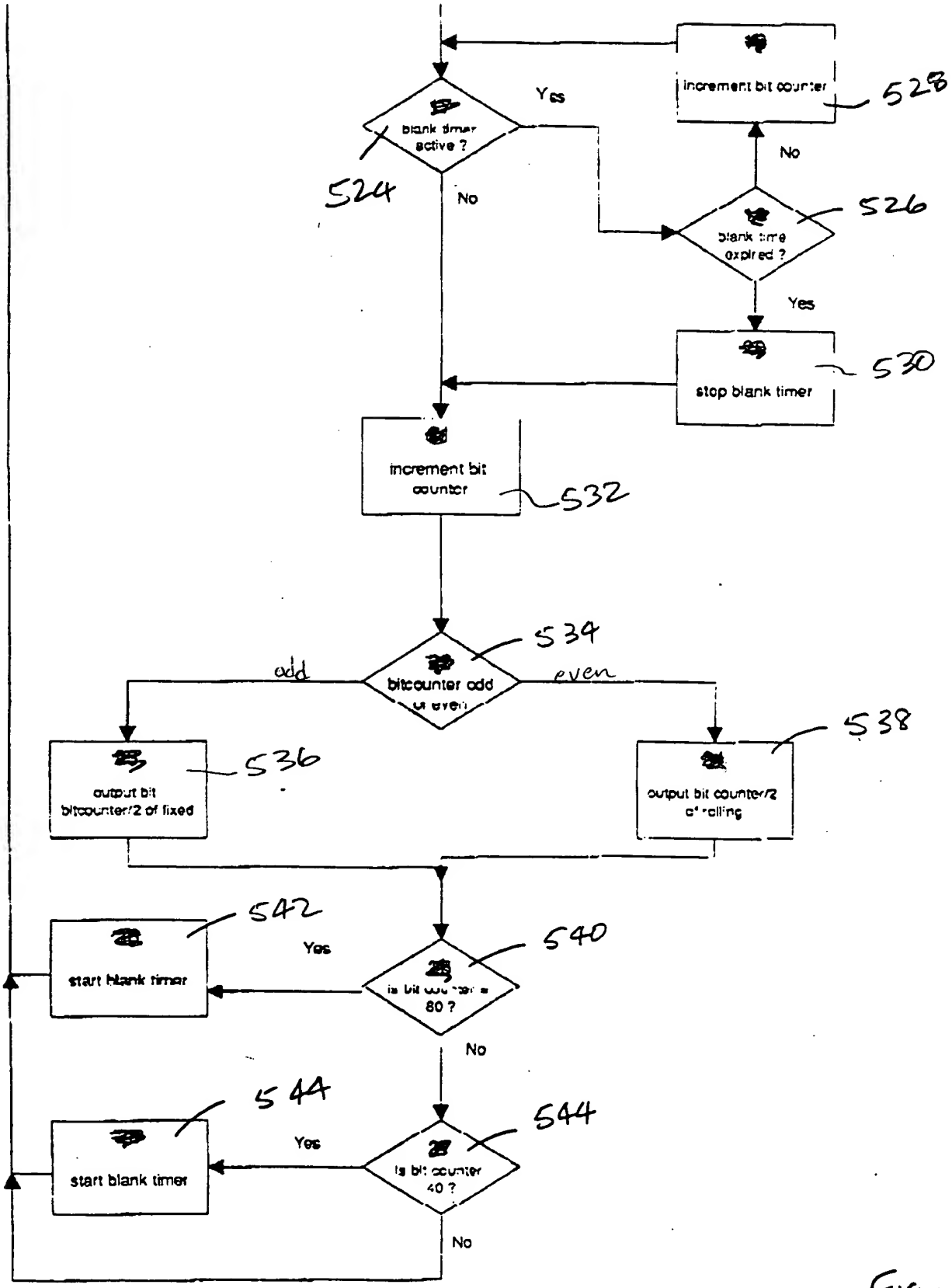

increment bit counter
528
blank timer active ?
Yes
524
No
No
blank time expired ?
526
Yes
stop blank timer
530
increment bit counter
532
bitcounter odd or even
534
odd
even
output bit bitcounter/2 of fixed
536
output bit counter/2 of rolling
538
start blank timer
542
Yes
is bit counter = 80 ?
540
No
start blank timer
544
Yes
Is bit counter 40 ?
544
No

Fig. 7C

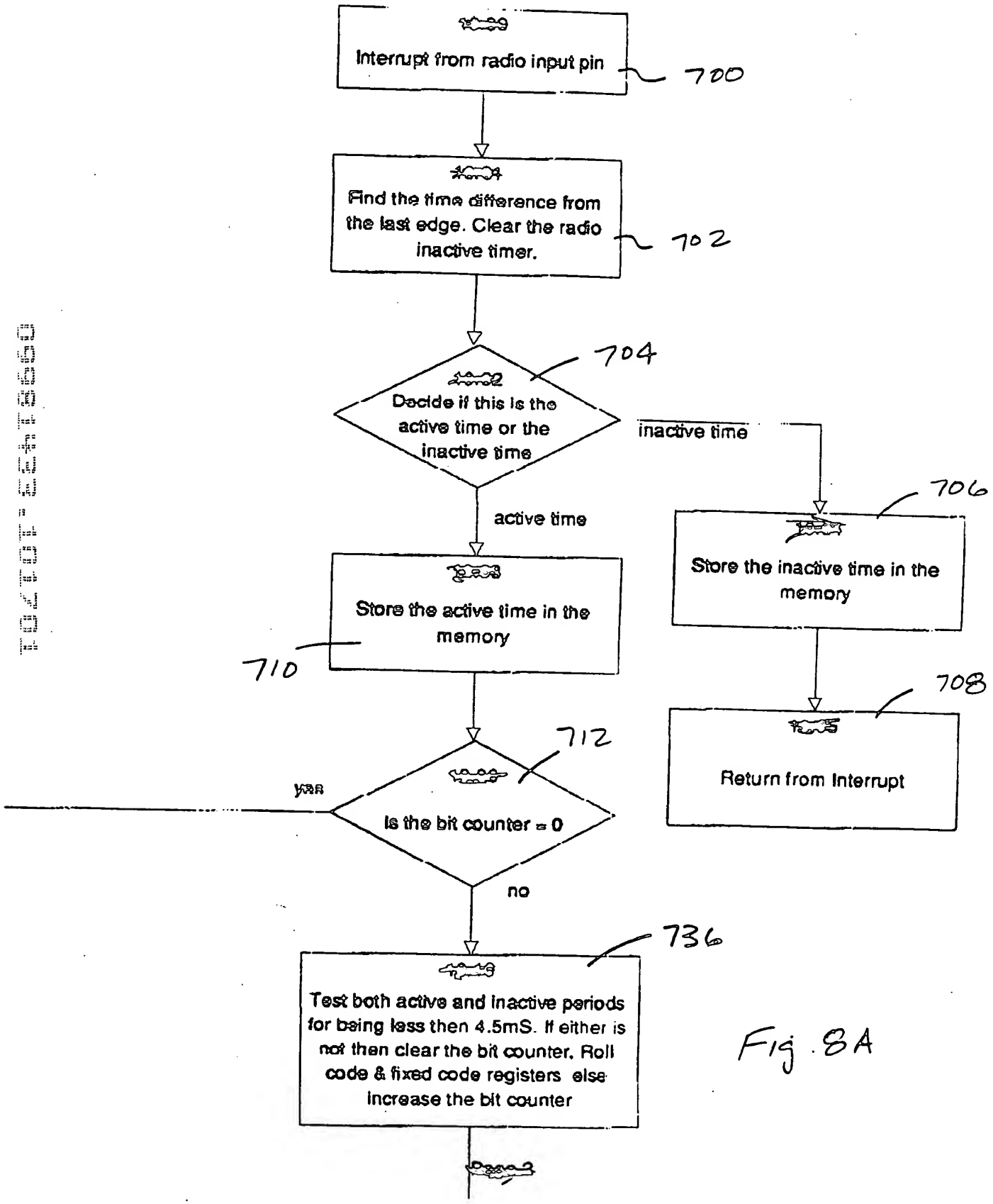

Interrupt from radio input pin
700
Find the time difference from the last edge. Clear the radio inactive timer.
702
Decide if this is the active time or the inactive time
704
inactive time
active time
Store the inactive time in the memory
706
Store the active time in the memory
710
Return from Interrupt
708
Is the bit counter = 0
712
yes
no
Test both active and inactive periods for being less then 4.5mS. If either is not then clear the bit counter. Roll code & fixed code registers else increase the bit counter
736

Fig. 8A

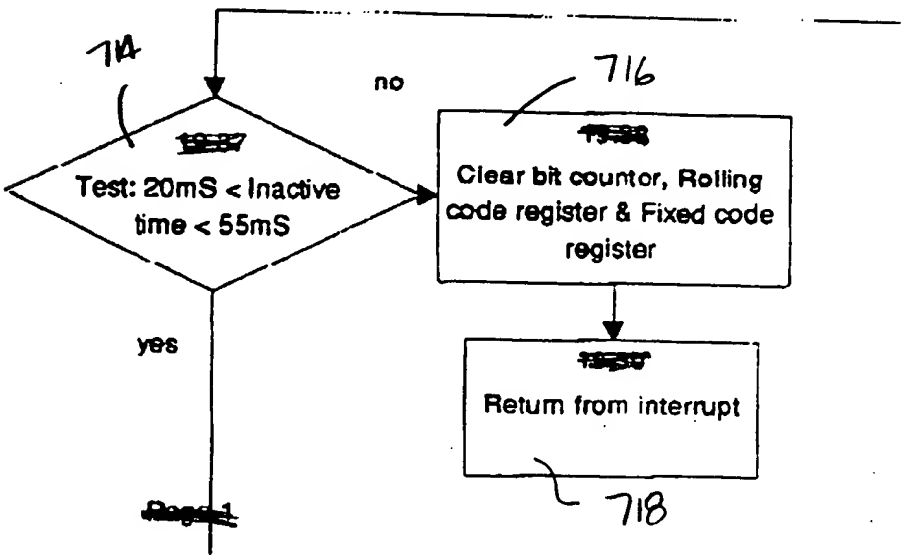

714
no
716
Test: 20mS < Inactive time < 55mS
Clear bit counter, Rolling code register & Fixed code register
yes
Return from interrupt
718

Fig. 8B

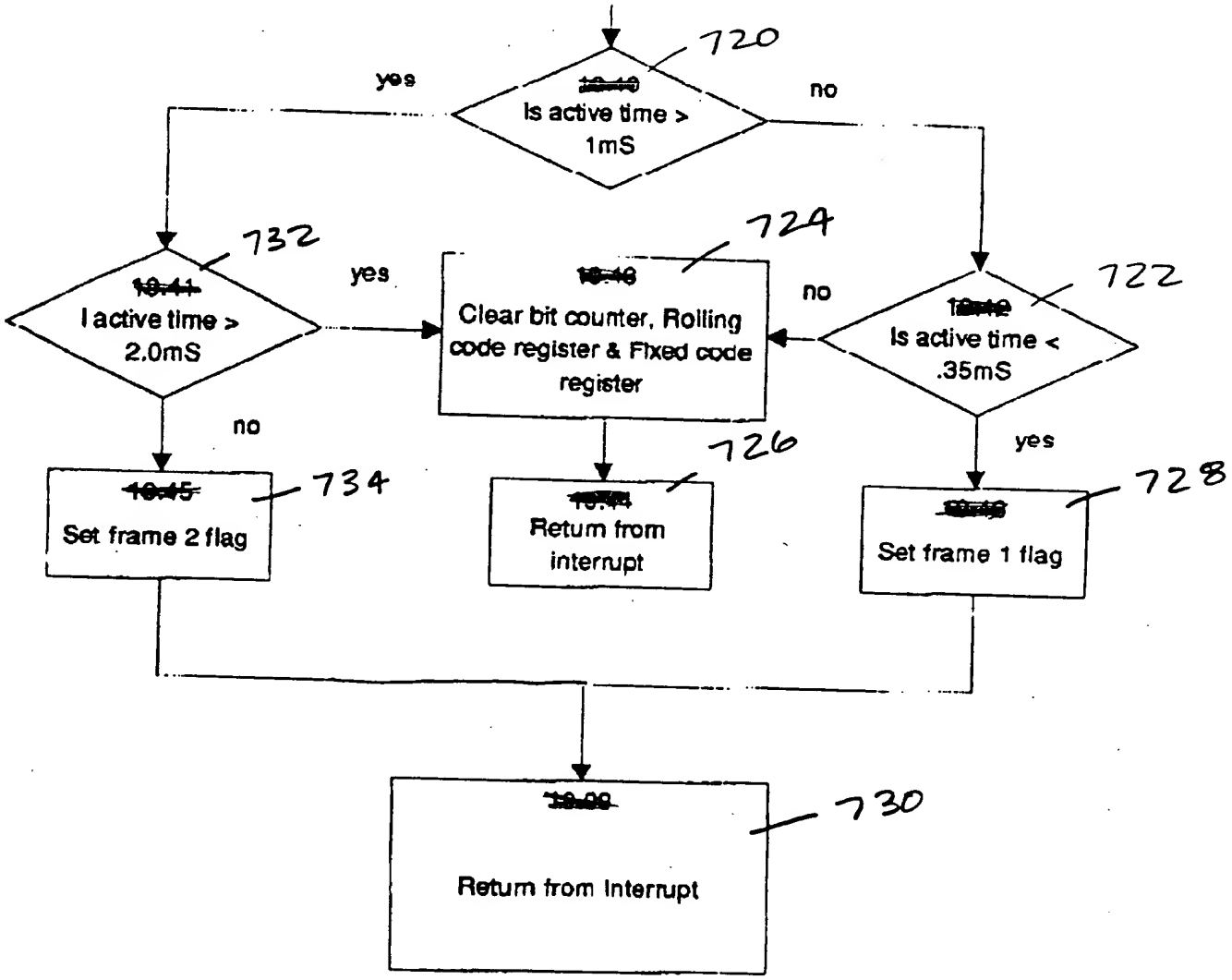

720
Is active time > 1mS
yes
no
732
I active time > 2.0mS
yes
no
724
Clear bit counter, Rolling code register & Fixed code register
722
Is active time < .35mS
yes
734
Set frame 2 flag
726
Return from interrupt
728
Set frame 1 flag
730
Return from Interrupt

Fig. 8C

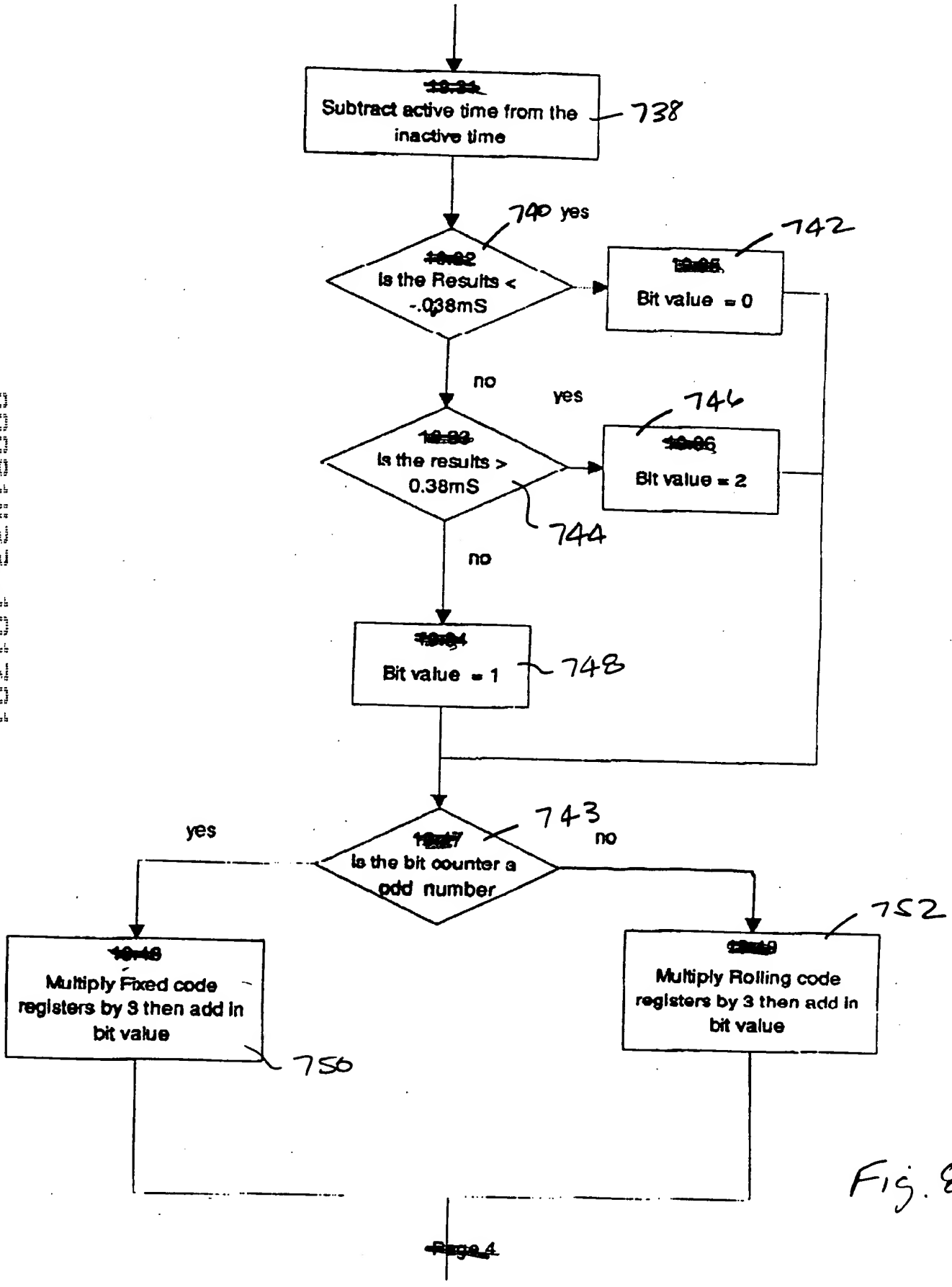

Subtract active time from the inactive time
738
740 yes
Is the Results < -.038mS
742
Bit value = 0
no
yes
746
Is the results > 0.38mS
Bit value = 2
744
no
Bit value = 1
748
yes
743
Is the bit counter a odd number
no
Multiply Fixed code registers by 3 then add in bit value
750
752
Multiply Rolling code registers by 3 then add in bit value

Fig. 8D

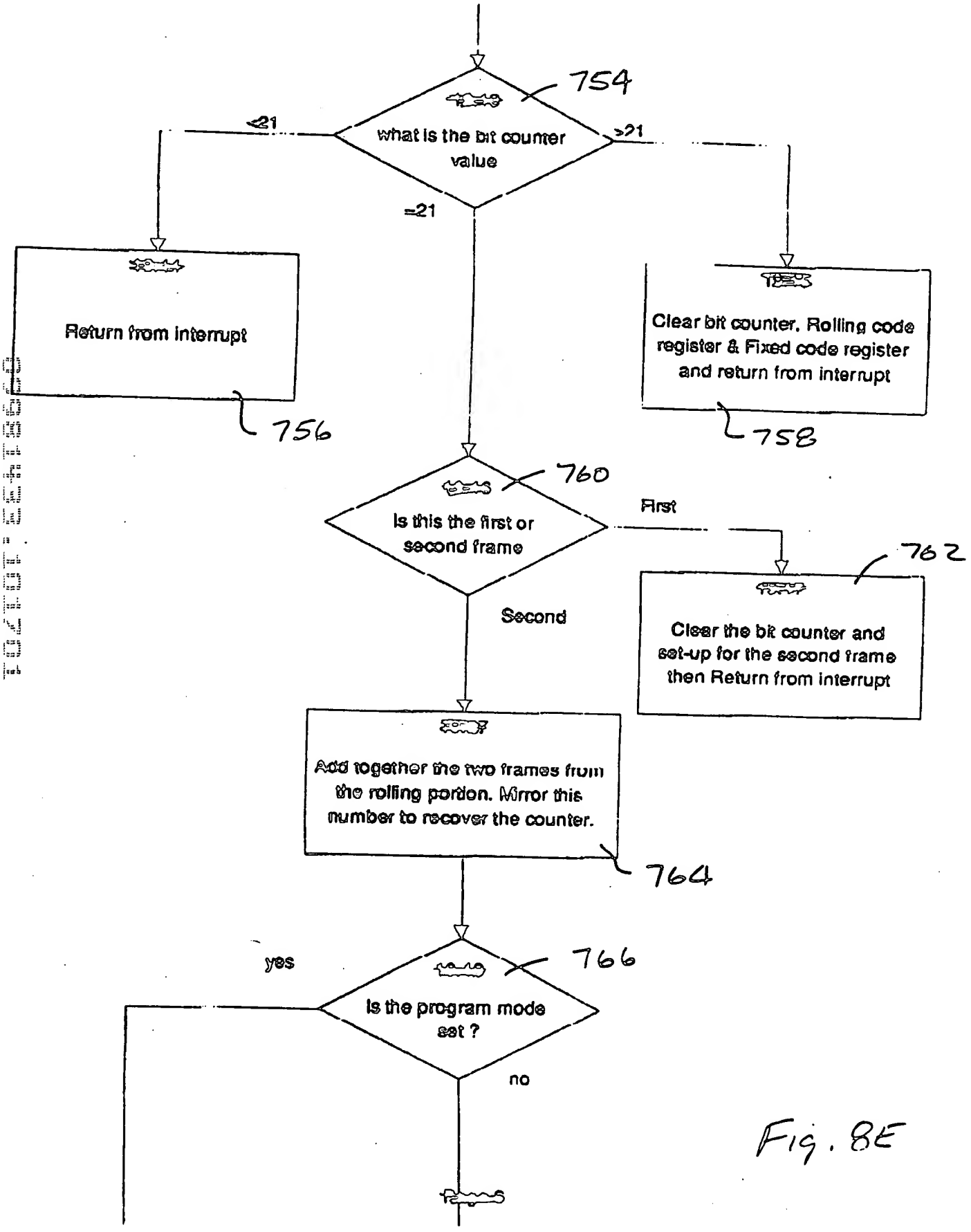

754
what is the bit counter value
<21
=21
>21
Return from interrupt
756
Clear bit counter, Rolling code register & Fixed code register and return from interrupt
758
760
Is this the first or second frame
First
Second
762
Clear the bit counter and set-up for the second frame then Return from interrupt
Add together the two frames from the rolling portion. Mirror this number to recover the counter.
764
766
yes
Is the program mode set ?
no

Fig. 8E

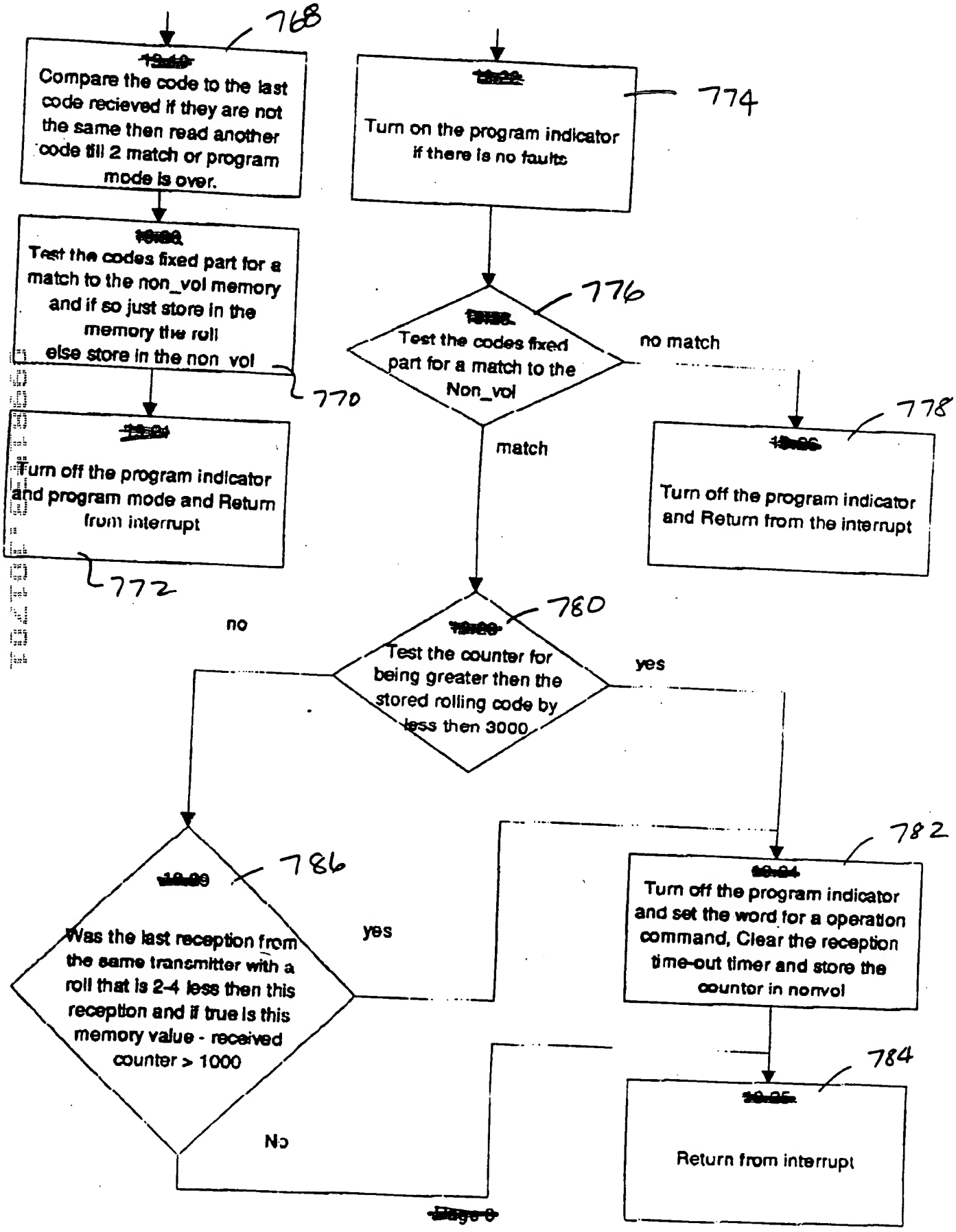

768
Compare the code to the last code recieved if they are not the same then read another code till 2 match or program mode is over.
Test the codes fixed part for a match to the non_vol memory and if so just store in the memory the roll else store in the non vol
770
Turn off the program indicator and program mode and Return from interrupt
772
774
Turn on the program indicator if there is no faults
776
Test the codes fixed part for a match to the Non_vol
no match
match
778
Turn off the program indicator and Return from the interrupt
780
Test the counter for being greater then the stored rolling code by less then 3000
no
yes
786
Was the last reception from the same transmitter with a roll that is 2-4 less then this reception and if true is this memory value - received counter > 1000
yes
No
782
Turn off the program indicator and set the word for a operation command, Clear the reception time-out timer and store the countor in nonvol
784
Return from interrupt

Fig. 8F